REMARKS

Claims 1 and 34 have been rejected under 35 U.S.C. §112, first paragraph, enabling requirement. Claims 13-33 have also been rejected under 35 U.S.C. §112, first paragraph, enabling requirement.

Claim 1 has been amended to more clearly and distinctly claim the invention.. The Applicants are not making a claim for any additive component, they are claiming a particular complete synergetic composition of soluble cutting oil (metalworking fluid). The main innovation in the present invention is the use of heavy alkyl benzene, which is a petrochemical by-product. There are so many additive components, however, all of them are not found suitable in the synergetic frame. After many experiments, additives have been selected which can form a synergic team with the alkyl benzene to give optimum performance and those are disclosed in the patent application.

If any commercially available additive pack in the market, fulfills the requirements specified in the patent application those can also be utilized. The Applicants are not filing the application to claim any additive component or emulsifier or additive but the Applicants are claiming the particular cutting oil/metalworking composition having three main components i.e., heavy alkyl benzene, emulsifier and additives.

In the subject application there is no need for undue experimentation by one trying to make the claimed invention, as examples of each component are given in the application. Additionally, there is no requirement that an example covers every combination of proposed components, as this would be unfair and overburdensome to the inventors. If an application is directed to a material having five or six different components and each of those components has been described as five or six different items, it is not necessary to show examples for each

and every one of those combinations. One skilled in the art has an understanding of previous metalworking fluids, and can practice the invention.

Upon reading the specification and the additional claims, the amounts and types of each of the components have been further disclosed and explained. Again one does not need to show every combination with every particular amount of every component as this would be overburdensome to the Applicants. One skilled in the art without undue experimentation would be able to follow and practice the invention as disclosed and claimed by the applicant. Thus, the Applicant's respectfully request that the Examiner's rejection of claims 1 and 13-34 under 35 U.S.C. §112, first paragraph, be withdrawn.

Claims 1-12 and 34 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Anantaneni, U.S. Patent No. 6,630,430, in view of Boffa, U.S. Patent No. 5,804,537; Tanaka, U.S. Patent No. 6,245,725 B1; Camenzind, U.S. Patent No. 7,026,438 B2; Van Dam, U.S. Patent No. 6,784,142 B2; Matsushita, U.S. Patent No. 5,741,763; Zoch, U.S. Patent No. 3,902,868; and Otaki, U.S. Patent No. 4,765,917.

The Examiner's rejection is respectfully traversed.

The present invention as now claimed is now directed to a metalworking fluid from heavy alkylate, including a residual fraction having C22 – C26 carbon atom of detergent class Alkyl Benzene in the concentration range of 40 to 85.68 weight percent of the metal working fluid. The fluid also includes at least one sulfonate/oleate class emulsifier in the range of 10 to 37.98 weight percent of the metalworking fluid, at least one additive pack having synergistic combination of various additive components such as, at least one triglyceride vegetable oil type lubricity booster component in the concentration range of 2-10 weight percent of metal working fluid, a phenol/amine type antioxidant component in the concentration range of 0.005-0.05

weight percent, a phenolic fungicide component in the concentration range of 0.005-0.05 weight percent, an organic sulfide/phosphosulfide extreme pressure additive component in the concentration range of 0.005-0.05 weight percent, a triazole/sulfonate type antirust component in the concentration range of 0.005-0.05 weight percent, an alcoholic co-surfactant component in the range of 1-10 weight percent of metal working fluid, a sulfonate/sulfate coupling agent in the range of 0.5 to 1.0 weight percent of metal working fluid, and an alkali earth metal salt component in the range of 0.5-1.0 weight percent of metal working fluid. The composition is useful as a general purpose soluble cutting oil by obtaining emulsion by stirring it in water 60 to 90 weight percent, which act as coolant/engineering aid in metalworking having less toxicity than mineral oil and value-addition to heavy alkyl benzene, a waste product.

Anantaneni, U.S. Patent No. 6,630,430 is directed to a process for the production of 2-phenyl alkyl benzene and sulfonate which is useful as a detergent and may be employed as an additive including motor oil, cutting fluid, emulsion and motor fuels. The patent is not related or similar to the present claim of a heavy alkyl benzene based metalworking fluid/soluble cutting oil.

Boffa, U.S. Patent No. 5,804,537 is directed to an engine oil composition using Ca, Mg, Na over based sulfonate of TBN 2 to 12. The patent is not related or similar to the present claim of a metalworking fluid (soluble cutting oil) composition. Boffa'537 is related to detergent additives, whereas the present invention is related to a heavy alkyl benzene based metalworking fluid/soluble cutting oil.

Tanaka, U.S. Patent No. 6,245,725 is directed to the application of sulfurized oxymolybdanum dithiocarbonate as an oil soluble additive for extended life lubricants. The

'725 patent is not related or similar to the present composition claim of a metalworking fluid made from a benzene waste byproduct.

Camenzind, U.S. Patent No. 7,026,438 discloses an automotive lubricant additive which is very different from a soluble cutting oil additive. The additive was 5-tert-butyl-4-hydrauxy-3-methyl (or tert butyl) phenyl substituted carboxylic acid ester with thiodi ethylene glycol and mono hydroxy alcohol reaction product. The metalworking fluid of the application is quite different from this compound.

Van Dam, U.S. Patent No. 6,784,142 discloses a combination which can be suitable for valve train wear and piston deposit modifiers in a diesel engine, while the present combination is directed to a heavy alkyl benzene based metalworking fluid/soluble cutting oil. The additive component of Van Dam is an Ethylene Carbonate treated succinimide or borated succinimide and these are different from those of the present application. The use of phenolic antioxidant is also different. Van Dam'142 is related to lube additives, which as previously described are very different from the metalworking fluid composition of the present invention.

Matsushita, U.S. Patent No. 5,741,763 discloses a composition which can be used to lubricate the cutting machine gear and other parts. It claims that this lube will not be miscible in used cutting oil and will separate quickly in a collecting tank. Due to this, used cutting oil will not be contaminated by machine oil (claimed under US Patent 5,741,763) and cutting oil will be easily recycled. The above oil is not for cutting process but for lubricating the machine. Matsushita'763 is directed to machine lube oil (not soluble oil), whereas the present invention is directed to a heavy alkyl benzene based metalworking fluid/soluble cutting oil.

Zoch, U.S. Patent No. 3,902,868 is directed to a mixture of oxygenates (alcohols and ketones) used for better combustion of gasoline in IC engines. This invention is quite different

from the Applicants'. Zoch'868 uses alcohols and ketones as an oxygenates mixture (may solubilized water drop in fuel) to improve the combustion in IC engines. It is not a metalworking fluid.

Otaki, U.S. Patent No. 4,765,917 is related to a formulation useful for smith-work such as forging/molding of metal where metal is heated to cause plastic to be in a soft state and then pressed in a die. The water solution which is used is applied on the die to prevent metal sticking in die. It has no specification or may be near to Bureau of Indian Standard (BIS) 9009. It is very different from machining (drilling, cutting, sawing, milling, turning, grinding) and the needed soluble cutting oil formulation, which is as per specification of BIS 1115/1986. Forging/molding is different from machining. In forging shapes, the metal is heated and pressed, so starch/cellulose/rosin like materials were used in the water solution to prevent metal sticking with the die. Machine shaping the metal by cutting, grinding, drilling, etc and oil, water and additives were used as a coolant, a lubricant and an anti-rust component. The Otaki'917 reference is related to forging additive, whereas the present invention is related to a heavy alkyl benzene based metalworking fluid/soluble cutting oil

As previously discussed, the Applicants' invention is directed to using a waste byproduct based metalworking fluid comprising three main components including commercial heavy alkyl benzene, emulsifiers and additives. This compound has not been previously used in such an application. The Applicants' invention is directed to a complete synergetic composition of soluble cutting oil (metalworking fluid). The use of a heavy alkyl benzene, a petrochemical byproduct, has not been taught or disclosed in any of the cited references.

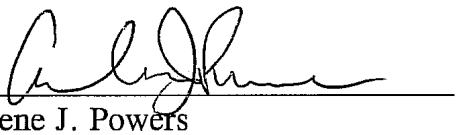
In view of the foregoing, the Applicants contend that the amended claim and the claims dependent there from are in proper form. Applicants also respectfully contend that the

teachings of Anantaneni'430, in view of Boffa'537, Tanaka'725, Camenzind'438, Van Dam'142, Matsushita'763, Zoch'868, and Otaki'917 do not establish a *prima facie* case of obviousness under 35 U.S.C. §103(a). Thus, claims 1-34 are considered to be patently distinguishable over the prior art of record and should be allowed.

The application is now considered to be in condition for allowance, and an early indication of same is earnestly solicited.

The Commissioner is authorized to charge Deposit Order Account No. 19-0079 for any fees that may be required.

Respectfully submitted,



Arlene J. Powers
Registration No. 35,985
Gauthier & Connors, LLP
225 Franklin Street, Suite 3300
Boston, Massachusetts 02110
Telephone: (617) 426-9180
Extension 110